REMARKS

I. Status Summary

Claims 56-61 and 63-92 are pending in the present U.S. patent application and have been examined. An Official Action (hereinafter the "Official Action") was issued October 5, 2004 by the United States Patent and Trademark Office (hereinafter the "Patent Office").

Claims 56-61 and 63-92 have been rejected under 35 U.S.C. § 112, second paragraph, upon the contention that the claims are indefinite for referencing the particular phosphatase in question by the terminology "ECRTP/DEP-1" without reference to a SEQ ID No.

Claims 56-61 and 63-92 have been rejected under 35 U.S.C. § 112, first paragraph, upon the contention that the specification fails to satisfy the written description requirement in view of the disclosure of only the human ECRTP/DEP-1 polypeptide of SEQ ID NO: 4.

Claims 56-58, 60-61, 68-73, 76-79, 81-82, and 90-91 have been rejected under 35 U.S.C. § 103(a) upon the contention that the claims are unpatentable over Honda et al. (1994) Blood 81:4186-94 (hereinafter "Honda") in view of Tonks et al. (WO 95/30008; hereinafter "Tonks").

Claims 56, 59, 63, 68, 76, 80, and 83 have been amended. Support for the amendments can be found throughout the specification as filed, including particularly at page 19, lines 4-19. Additional support for the amendments can be found at page 80, lines 11-16.

Reconsideration of the application as amended and based on the arguments set forth herein below is respectfully requested.

II. Summary of Telephone Interview Dated January 21, 2005

A telephone interview was conducted on January 21, 2005. Participating in the interview were Examiner Christopher H. Yaen of the Patent Office and applicants' representatives Arles A. Taylor, Jr. and Christopher P. Perkins. Discussed during the

interview were the pending rejections of the claims under 35 U.S.C. § 112, first and second paragraphs, and under 35 U.S.C. §103.

In the Interview, the amendments to claims 56, 59, 63, 68, 76, 80, and 83 concerning the recitation of "an ECRTP/DEP-1 density enhanced phosphatase-1 polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 4" were discussed. It was believed that these amendments would address the rejections under § 112. Applicants respectfully submit that these claims have been amended accordingly, as discussed in more detail hereinbelow.

With regard to the obviousness rejection of claims 56-58, 60-61, 68-73, 76-79, 81-82, and 90-91 over Tonks and Honda, applicants' representatives asserted that the cited references did not motivate the skilled artisan to make anti-DEP-1 antibodies in a diluent or excipient pharmaceutically acceptable in humans because the combination did not disclose or suggest that such antibodies could be used to modulate any *in vivo* activity of DEP-1 in humans. In particular, applicants' representatives contended that Honda does not disclose any specific biochemical activities for DEP-1, and the disclosure of Tonks is limited to analysis of possible biochemical activities of protein tyrosine phosphates generally. Thus, it was contended that the cited combination could not motivate one of ordinary skill in the art to produce anti-DEP-1 antibodies in diluent or excipient pharmaceutically acceptable for use in humans. While Examiner Yaen could not confirm that the arguments presented addressed the 103 rejections without further reviewing the Tonks reference, Examiner Yaen did suggest that there might be no motivation to make the claimed antibodies in a diluent or excipient pharmaceutically acceptable in humans based upon Tonks. He suggested that these arguments should be presented formally for consideration, which applicants respectfully submit they have done hereinbelow.

Finally, claims that are free of the art and that should be in condition for allowance contingent upon the removal of the rejections under § 112 were also discussed. Examiner Yaen stated that it was his preliminary view that claims that recited either the ATCC deposit or the molecular weight of the claimed antibodies

should be in condition for allowance. These claims include claims 59, 74, 75, 80, and 89.

The participants also discussed claims in which a particular epitope of DEP-1 was recited: namely, SEQ ID NO: 1. An exemplary claim that includes this element is claim 63. Applicants' representatives asserted that the language of the claim states that the epitope comprises SEQ ID NO: 1, and that the term "epitope" refers to the particular sequence to which an antibody binds. Examiner Yaen suggested amending these and similar claims to recite an epitope consisting of SEQ ID NO: 1.

Summarily, applicants believe that the amendments discussed during the interview and presented herein should address the rejections of the claims under § 112. Applicants further respectfully submit that the remarks presented hereinbelow are reflective of the issues discussed in the interview with regard to the obviousness rejection, and should also address the rejections under § 103.

III. Response to the Rejection Based on 35 U.S.C. § 112, Second Paragraph

Claims 56-61 and 63-92 have been rejected under 35 U.S.C. § 112, second paragraph, upon the contention that the claims are indefinite. With regard to the recitation of "ECRTP/DEP-1" in the claims, the Patent Office asserts that "the use of laboratory designations only to identify a particular molecule renders the claims indefinite because different laboratories may use the same laboratory designations to define completely distinct molecules". Official Action at page 4. After careful consideration of the rejection and the Patent Office's basis therefor, applicants respectfully traverse the rejection and submit the following remarks.

Applicants respectfully submit that even assuming *arguendo* that the Patent Office's assertion is correct, the claims must be read in light of the specification, and the specification clearly discloses that the term "ECRTP/DEP-1" corresponds to a receptor tyrosine phosphatase cloned from HeLa cells that increases in expression as cells approach high density as reported in Ostman *et al.*, *Proc Natl Acad Sci USA* 91:9680-9684 (1994). *See* page 6, lines 14-17, of the specification.

Nonetheless, in an effort to facilitate the prosecution of the claims, claims 56, 59, 63, 68, 76, 80, and 83 (*i.e.* all claims reciting "ECRTP/DEP-1") have been amended to recite "a [human] ECRTP/DEP-1 density enhanced phosphatase-1 polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 4". SEQ ID NO: 4 presents the amino acid sequence of the DEP-1 polypeptide as disclosed in the Ostman *et al.* reference cited above and was included in the Substitute Sequence Listing filed April 15, 2004 in conjunction with Amendment D. Applicants respectfully submit that these amendments are in accordance with the suggestion by the Patent Office found on page 4 of the Official Action.

Summarily, since claims 56, 63, 68, 76, and 83 are the currently pending independent claims and have been amended as outlined hereinabove, applicants believe that the instant rejection of claims 56-61 and 63-92 has been addressed. Applicants respectfully request that the rejection be withdrawn, and submit that the claims are in condition for allowance at this time.

IV. Response to the Rejection Based on 35 U.S.C. § 112, First Paragraph

Claims 56-61 and 63-92 have been rejected under 35 U.S.C. § 112, first paragraph, upon the contention that the claims do not comply with the written description requirement set forth therein. The Patent Office asserts that the written description in this case only sets forth a human ECRTP/DEP-1 polypeptide of SEQ ID NO: 4, and thus the written description is not commensurate in scope with the claims. After careful consideration of the rejection and the Patent Office's basis therefor, applicants respectfully traverse the rejection and submit the following remarks.

While applicants do not necessarily agree with the Patent Office's assertions related to the instant rejection, applicants have amended claims 56, 59, 63, 68, 76, 80, and 83 (*i.e.* all claims reciting "ECRTP/DEP-1") as outlined hereinabove. Applicants respectfully submit that these amendments are solely to facilitate the prosecution of the claims, and are not to be interpreted as a surrender of any subject matter originally encompassed by the claims. Applicants further respectfully submit that the amendments address the instant rejection. Accordingly, applicants respectfully request

that the rejection be withdrawn, and respectfully solicit a Notice of Allowance to that effect.

V. Rejection Based on 35 U.S.C. § 103(a)

Claims 56-58, 60-61, 68-73, 76-79, 81-82, and 90-91 have been rejected under 35 U.S.C. § 103(a) upon the contention that the claims are unpatentable over Honda in view of Tonks. This rejection has been maintained from the previous Official Action, and is newly applied to claims 90 and 91. After careful consideration of the rejection and the Patent Office's bases therefor, applicants respectfully submit that the Patent Office has not met its burden in establishing a *prima facie* case of obviousness.

V.1. The cited combination does not disclose each and every element of the claims

In order to support a *prima facie* case of obviousness under § 103, the cited references must disclose or suggest all the claim elements. Applicants respectfully submit that the combination of Honda and Tonks fails to disclose or suggest all the elements of the currently claimed subject matter. Particularly, the cited combination does not teach or suggest an antibody in a diluent or excipient pharmaceutically acceptable in humans. Each of the instantly rejected claims recites this element directly or indirectly. As discussed in more detail hereinabove, Honda does not disclose or suggest antibodies provided in such a diluent or excipient. Neither does Tonks disclose or suggest this element. Since the cited combination of references does not disclose or suggest each and every element in the claimed subject matter, applicants respectfully submit that a rejection under § 103 cannot be properly made. *See* MPEP § 2143.03. The instant rejection under § 103 is therefore improper on these grounds alone, and applicants respectfully submit that the next Official Action cannot properly be final.

Taken in their totalities, then, applicants respectfully submit that the combination of Honda and Tonks does not teach or suggest each and every element of the claims. Accordingly, applicants respectfully submit that a *prima facie* case of obviousness has not been established. As such, applicants respectfully request that the rejection of claims 56-58, 60-61, 68-73, 76-79, and 81-82 under 35 U.S.C. § 103(a) be withdrawn, and that the claims be allowed at this time.

V.2. There is no motivation to combine the references

In order to establish a *prima facie* case of obvious, the Patent Office must suggest a motivation to combine the cited documents to arrive at the claimed subject matter. Applicants respectfully submit that the combination of Honda and Tonks does not contain any suggestion or provide any motivation to place anti-DEP-1 antibodies in a diluent or excipient pharmaceutically acceptable in humans. In attempting to establish a motivation in the cited combination in the present rejection of record, applicants respectfully submit that the Patent Office is taking disparate elements of Tonks out of context in order to generate the asserted motivation, and that when the disclosure is viewed in its entirety, the overall teaching is clearly to the contrary. As such, applicants respectfully submit that even if the Patent Office cites an additional reference to teach the missing element, a rejection under 35 U.S.C. § 103 is improper.

To elaborate, Tonks appears to disclose that protein tyrosine phosphatases (PTPs) as a class are interesting molecules that have been implicated in a large range of activities that might have intriguing biological roles. For example, page 5 of Tonks discloses that "PTP action may underlie mechanisms of growth inhibition", and that "PTPs have been directly linked to density arrest of cell growth", observations that "lead to speculation regarding PTP involvement in modulation of cytoskeletal integrity, as well as related cellular phenomena such as transformation, tumor invasion, metastasis, cell adhesion, and leukocyte movement along and passage through the endothelial cell layer in inflammation". Tonks at page 6. However, this discussion relates to PTPs generally, and applicants respectfully submit that Tonks does not provide any evidence that ECRTP/DEP-1 is involved in any of these processes.

As such, applicants respectfully submit that Tonks discloses no more than that there has been conjecture regarding PTPs as a class in a wide range of biological functions, and thus PTPs generally are candidates for further experimentation into their roles in these functions. Applicants respectfully submit that at most, this sort of speculation is an invitation to explore a branch of research involving members of various PTP families.

Furthermore, applicants respectfully submit that the disclosure of Tonks must be read in the context of the objective of the application. Specifically and as indicated on page 6, the objective of the Tonks application is to "characterize these proteins in terms of their amino acid and encoding DNA sequences", information that could be used to produce the protein in order to elucidate substrates, regulatory mechanisms, and subcellular localization of PTPs. Tonks discloses the use of rodent experimental system to study the activities of modulators *in vivo* (*see* page 10, lines 14-16) but Tonks does not teach or suggest the use of human experimental systems for this purpose. On the contrary, in light of the ethical and regulatory hurdles in using humans as experimental subjects, one would use an alternative experimental system to help identify and characterize Type III DEPs. Viewed from this perspective, Tonks not only fails to motivate one to make or use a binding protein "in a diluent or excipient pharmaceutically acceptable in humans", but teaches away from it. Accordingly, Tonks and Honda, alone or in combination, fail to teach or suggest Applicants' claimed invention.

Furthermore, applicants respectfully submit that the Patent Office's assertion that "it would be prima facie obvious to one of ordinary skill in the art to use excipients that are compatible for human use because the purpose of modulation is to affect the outcome of a disease" is clearly a case of over-reading the Tonks disclosure and applying an impermissible hindsight reconstruction. Tonks teaches that the purpose of *in vivo* modulation is to elucidate substrates, regulatory mechanisms, and subcellular localization of PTPs. Nowhere in the disclosure does Tonks teach or suggest using humans to achieve these objectives. Neither does Tonks teach modulation of any Type III DEPs to affect the outcome of any disease. The Patent Office has gleaned this from Applicants' own disclosure. The Federal Circuit has repeatedly warned that the requisite motivation must come from the prior art, not applicant's specification. *See In re Dow Chem. v. American Cyanamid*, 5 USPQ2d at 1531-1532 ("[t]here must be a reason or suggestion for selecting the procedure used, other than the knowledge learned from applicant's disclosure"). Applicants respectfully submit that using an applicant's disclosure as a blueprint to reconstruct the claimed invention from isolated

pieces of the prior art contravenes the statutory mandate of §103 of judging obviousness at the point in time when the invention was made. *Grain Processing Corp. v. American Maize-Prods. Corp*, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

V.3. Claims reciting the epitope of SEQ ID NO: 1

Applicants respectfully submit that claim 63, for example, recites the following: an isolated antibody, or a fragment or derivative thereof, which specifically binds to an epitope present in an extracellular domain of an ECRTP/DEP-1 density enhanced phosphatase-1 polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 4, the epitope comprising the sequence QSRDTEVL (SEQ ID NO: 1) (emphasis added). Thus, applicants respectfully submit that the epitope comprises the sequence of SEQ ID NO: 1, and thus that the claimed antibodies bind to the sequence QSRDTEVL recited therein.

Applicants respectfully submit that an epitope, also known in the art as an antigenic determinant, is a region of an antigen to which an antibody binds. As such, the terms "epitope" and "antigen" are not interchangeable. For example, an antigen may be made up of multiple epitopes. Applicants respectfully submit, therefore, that the use of the word "epitope" in claim 63 indicates that the particular sequence to which the claimed antibody binds includes SEQ ID NO: 1. In other words, the antibody recognizes and binds to SEQ ID NO: 1.

Similarly, claim 61 recites an isolated antibody that binds an eight amino acid having the sequence QSRDTEVL (SEQ ID NO: 1). Applicants respectfully submit that that this claim thus recites an isolated antibody that recognizes and binds to SEQ ID NO: 1. However, in an effort to facilitate the prosecution of this claim, applicants respectfully submit that claim 61 has been amended to recite an isolated antibody that binds to an eight amino acid epitope consisting of a sequence QSRDTEVL (SEQ ID NO: 1). Applicants respectfully submit that the amendment is not to be interpreted as a surrender of any subject matter originally encompassed by the claims.

Accordingly, applicants respectfully submit that particularly with respect to claims 61, 63-67, 83-88, and 92, all of which recite an antibody that binds to SEQ ID NO: 1, applicants respectfully submit that that Patent Office has not presented a *prima facie*

case of obviousness over the cited references. Applicants respectfully submit that neither Tonks nor Honda disclose or suggest an antibody that binds to this epitope, nor do they suggest preparing an antibody that binds to this epitope in a diluent or excipient pharmaceutically acceptable in humans. Applicants respectfully request that the rejection of claim 61 be withdrawn. Furthermore, applicants respectfully submit that claims 63-67, 83-88, and 92 are free of the art, and respectfully submit that they are in condition for allowance at this time.

V.4. Summary

In conclusion, the cited combination of Honda and Tonks does not support a *prima facie* case of obviousness because the cited references do not disclose each and every element of the claims, and further because the cited references do not contain a suggestion to modify the cited document(s) to arrive at the claimed subject matter. Accordingly, applicants respectfully submit that a *prima facie* case under 35 U.S.C. § 103(a) has not been presented regarding claims 56-58, 60-61, 68-73, 76-79, 81-82, and 90-91 over Honda in view of Tonks. Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. § 103(a) of claims 56-58, 60-61, 68-73, 76-79, 81-82, and 90-91 over Honda in view of Tonks. Allowance of these claims is also respectfully requested.

CONCLUSIONS

In light of the above Amendments and the Remarks presented hereinabove, it is respectfully submitted that claims 56-61 and 63-92 are in proper condition for allowance, and such action is earnestly solicited.

If any minor issues should remain outstanding after the Examiner has had an opportunity to study the Amendment and Remarks, it is respectfully requested that the Examiner telephone the undersigned attorney so that all such matters may be resolved and the application placed in condition for allowance without the necessity for another Action and/or Amendment.

DEPOSIT ACCOUNT

The Commissioner is hereby authorized to charge any deficiencies or credit any overpayments associated with the filing of this correspondence to Deposit Account Number **50-0426**.

Respectfully submitted,
JENKINS, WILSON & TAYLOR, P.A.

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